

object, from image to image, is highlighted, including use of a modulated image of said object as said inserted indicia.

45. (NEW) The method according to Claim 25 wherein said selected portion comprises an object within said video image display and whereby the path traversed by said object, from image to image, is highlighted, including use of an enhanced image of said object as said inserted indicia.

REMARKS

Claims 1-20 are pending in this application.

Claims 1, 4-7, 9-12, 14, 15 and 18 were rejected.

Claims 2, 3, 8, 13, 16, 17, 19 and 20 were objected to.

Claims 1 and 10 were amended.

New Claims 21-45 were added.

I. 35 U.S.C. §102 REJECTION

The Examiner has rejected Applicant's Claims 1 and 10 under 35 U.S.C. §102(d) as being anticipated by Cawley *et al.*, U.S. Patent No. 4,667,221. Specifically, the Examiner suggests that each element of Applicant's Claims 1 and 10, his two independent claims, read directly on the invention disclosed by Cawley. Applicant respectfully traverses this basis for rejection, and will show hereafter that his Claims 1 and 10 recite patentable

subject matter which is not anticipated by Cawley. Additionally, Applicant has amended his Claims 1 and 10 to more clearly establish the distinctiveness of his claimed invention over the invention disclosed by Cawley.

Applicant's Claim 1 recites an:

Apparatus for altering a video image display to provide a substituted display of desired indicia within a preselected portion of said video image display and independent of the size of said selected portion which size is strictly a function of the TV camera, said TV camera operable at various different perspectives employed to create said display, comprising:

means for selecting said portion of said display to be substituted,

means responsive to said video signal display for recognizing said selected portion of said display,

means for generating video signals indicative of said desired indicia to be substituted,

means responsive to said desired indicia signals and said video signal for inserting said indicia into said video image display at said preselected portion.

Claim 10 recites substantially similar functionality in method-claim format.

In support of his conclusion that Applicant's claims read on Cawley, the Examiner suggested that Cawley shows a "selecting means" (Cawley's "defining means"); a "video signal display responsive means" (his "combiner 11"); an "indicia video signal

generating means" (Cawley's background); and a "mixing means 14". The Examiner notes that Cawley's selecting means can select the whole chrome area (1a) to be the defined area.

Applicant believes that the Examiner's conclusion that each of the elements of his Claims 1 and 10 are anticipated by Cawley reflects an overly simplistic view of several elements of Applicant's claims -- e.g., Cawley's combiner 11, which the Examiner analogizes to Applicant's "means for recognizing the selected portion of the display", simply combines the video signals from Cawley's frame store 5 and his frame store 9 to form a composite image for display on display device 6, and has no "recognition" functionality whatsoever, so that this element of Applicant's claim cannot reasonably be said to be anticipated by Cawley *et al.* More significantly, however, Applicant believes that his invention represents a major advance in the state of the art and therefore that the focus of analysis here should be on the critical distinctiveness of Applicant's invention over Cawley or over any prior art device, rather than elemental differences in Applicant's claims relative to Cawley *et al.* -- recognizing of course the necessity that such distinctiveness be properly claimed. At its essence, Applicant's inventive novelty lies in the functionality of recognizing features defining a selected area on the basis of geometry and then dynamically maintaining the proper size and perspective for an inserted indicia, as the size and perspective of an identified segment of the televised scene -- which comprises the selected portion of the video image and which is to be replaced by the inserted indicia, itself changes.

It is noteworthy in this regard that Applicant's Claim 16, which is addressed specifically to the dynamic substitution functionality of Applicant's invention, was found by the Examiner to be allowable if rewritten in independent form so as to incorporate all of

the limitations of its base claim. This finding suggests that the Examiner also recognizes that such functionality is indeed a unique aspect of Applicant's invention.

Applicant believes that this dynamic substitution functionality as to an identified segment of the video image is incorporated in existing Claims 1 and 10 -- note, for example, that the preamble for each of those claims specifically addresses the functionality wherein the size of the substituted display comprising the desired indicia is independent of the size of the preselected portion of the video image display, into which the substituted display is inserted, as the size of that preselected portion changes for various different perspectives introduced by the T.V. camera providing the input signal for that video display image. As Applicant believes the Examiner will appreciate, Cawley, on the other hand, discloses a purely static image substitution functionality, such that a new selected portion would have to be manually selected by Cawley's defining means for any change in size, perspective or location of the identified segment within the video image. Other prior art devices are similarly limited, such that the selected portion, however defined, is always a static "window" within the video image, and any attempt to track displayed subject matter from frame to frame within such a "window" will require a manual redefinition of that "window" as the displayed subject matter changes in size or perspective. Thus, Applicant requests that the Examiner reconsider his conclusion that Applicant's Claims 1 and 10 are anticipated by Cawley.

Even though Applicant believes that his Claims 1 and 10 are distinguishable over Cawley in their present form, he has nonetheless determined -- out of a desire to quickly reach closure with the Examiner in defining the scope of his invention -- to amend

those claims so as to further clarify the functionality discussed above of maintaining the inserted indicia in proper proportion to the selected segment as that selected segment changes in size or perspective with changes in the video signal. Thus, as the Examiner will observe, Applicant has incorporated various amendments to Claims 1 and 10 toward the goal of clarifying the scope of Applicant's claimed invention -- in particular, modification of the selecting means/step to clarify that the selected portion is indicative of an identifiable segment of the televised scene which is subject to change in size and perspective and clarification of the language in the preamble respecting maintenance of a correspondence in size and perspective between the inserted indicia and the selected portion of the video image.

It is very clear that Cawley *et al.* (or any other prior art) does not show, or even suggest the functionality of dynamically maintaining a correspondence in size and perspective of the inserted indicia image with respect to changes in size or perspective occurring in an identified segment of the televised image comprising the preselected portion of the video image. Applicant is therefore confident that, with these changes, the Examiner will agree that Claims 1 and 10 represent patentable subject matter and that the Examiner's Section 102(b) basis for rejection has been overcome.

The Examiner rejected Applicant's Claim 4 under 35 U.S.C. §102(b) as being anticipated by Cawley *et al.*, suggesting that Cawley's touch pad 7 corresponds to Applicant's light pen as a means for outlining the portion of the display to be selected. Without regard to whether there is in fact a correspondence between Cawley's touch pad 7 and Applicant's light pen, Applicant's Claim 4 depends from Applicant's Claim 1 and incorporates all of the

limitations of that base claim. Inasmuch as Claim 1, as amended, has been shown hereinabove to be patentable over Cawley, dependent Claim 4 must also be patentable. Accordingly, Applicant submits that with his showing above that the base claim for dependent Claim 4 is patentable, the Examiner's basis for rejection of that dependent Claim 4 has been overcome.

Applicant's Claim 6 was also rejected by the Examiner under 35 U.S.C. §102(b) as being anticipated by Cawley *et al.*, the Examiner suggesting that Cawley's store means 25 corresponds to Applicant's delay means. Without regard to whether a correspondence actually exists between Applicant's delay means and Cawley's store means, Applicant notes that Claim 6 depends from Claim 1 and incorporates all the limitations of that base claim. Inasmuch as Claim 1, as amended, has been shown hereinabove to be patentable over Cawley, dependent Claim 6 must also be patentable. Accordingly, Applicant submits that with his showing above that the base claim for dependent Claim 6 is patentable, the Examiner's basis for rejection of that dependent Claim 6 has been overcome.

Applicant's Claim 7 was rejected by the Examiner under 35 U.S.C. §102(b) as being anticipated by Cawley *et al.*, based on the Examiner suggestion that Applicant's pattern recognition means is met by Cawley's signal selector 12. Claim 7 depends from Claim 1 and incorporates all the limitations in that base claim. Since that base claim has been shown to be patentable, dependent Claim 7 must also be patentable. Nonetheless, even though a possible correspondence between Applicant's pattern recognition means and Cawley's signal selector therefore becomes immaterial, Applicant submits that Cawley's signal selector means can not possibly correspond to Applicant's recognition means and

wishes to briefly address that issue. Cawley describes the operation of his signal selector (Column 3, lines 38-42) as selecting video signals from within the defined area "in response to the addresses generated in address generator 8 by blocking the signals from outside the defined area." Thus, it can readily be seen that Cawley's signal selector is essentially a mechanical switching means which passes or blocks the video signal based on whether such a signal represents video information from within or without an area defined by a fixed set of addresses in the video display. Applicant's pattern recognition means, on the other hand, not only operates to recognize signals referenced to the selected area, as opposed to a "recognition" of fixed addresses around the perimeter of one such selected area, but also recognizes such signal patterns independently of the size of the selected portion. Clearly, Cawley's selector means is, at best, limited to recognizing the signal content of a single fixed area. Any change in the size of such an area would simply not be possible with Cawley's system, absent a manual redefinition of the selected area. Accordingly, Applicant respectfully submits that Cawley's signal selector does not anticipate Applicant's pattern recognition means.

Claims 9 and 14 were rejected by the Examiner under 35 U.S.C. §102(b) as being anticipated by Cawley *et al.*, the Examiner suggesting that Cawley's discussion, at Column 3, lines 40-43, respecting detection of a range of values of luminence and two color-difference parameters corresponds to Applicant's recognition of color present in the video display for inhibiting the insertion of the substitute image. Although Applicant does not agree with the Examiner's suggestion that Cawley discloses the substance of Applicant's Claims 9 and 14, the issue becomes immaterial with Applicant's showing hereinabove that

a natural scene or sports court. As the Examiner, of course, recognizes, Applicant's Claim 5, 11 and 12 are addressed to specific illustrations of the substituted indicia of Applicant's invention. As such, those claims necessarily depend from a base claim wherein the essentials of Applicant's invention are defined (i.e., Claim 5 depends from base Claim 1, and Claims 11 and 12 depend from base Claim 10). Inasmuch as independent Claims 1 and 10, as amended, the base claims for these rejected dependent claims, have been shown above to be patentable, these dependent claims, which incorporate all of the limitations in such patentable base claims, must also be patentable.

Accordingly, Applicant submits that the basis for the Examiner's rejection of dependent Claims 5, 11 and 12 under 35 U.S.C. §103 has been overcome, and those claims shown to be allowable.

III. OBJECTIONS

The Examiner has objected to Claims 2, 3, 8, 13, 16, 17, 19 and 20 as being dependent upon a rejected base claim, while also indicating that such claims would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. Although Applicant has shown above that the base claims for these objected-to claims (Claims 1 and 10) as amended, are patentable, and therefore the basis for the Examiner's objection to these dependent claims will have been overcome, Applicant has nonetheless added a series of additional claims in keeping with the Examiner's suggestion that each of these objected to claims be rewritten in independent form, incorporating the limitations of their base claims and any intervening claims.

Specifically, new Claims 21-22 correspond to objected-to Claims 2 and 3, respectively, rewritten in independent form. New Claim 23 corresponds to objected-to Claim 8 rewritten in independent form and incorporating the limitations of base Claim 1 and intervening Claim 7. New Claims 24-28 correspond to objected-to Claims 13, 16, 17, 19 and 20, respectively, rewritten in independent form. Additionally, new Claim 29 has been added, reflecting dependent Claim 7 rewritten in independent form, based on Applicant's argument, *supra*, that Claim 7 is patentable over the reference (Cawley) cited by the Examiner.

Applicant has further added new Claims 30 & 32 which are essentially comparable to amended Claim 1 with the changes in size and perspective for the selected identifiable segment being referenced to the frame rate of the video signal or to a random variation from image-to-image, along with the recognition means being referenced to video attributes around the perimeter of the selected portion of the display to more clearly reflect the preferred embodiment of the invention. Similarly, new Claims 31 and 33 have been added which are essentially comparable to amended Claim 10 to reference changes in size and perspective in the selecting step to either the frame rate of the video signal or to a random variation from image-to-image. New dependent Claims 34-37, which depend from, respectively, amended Claims 1 & 10 and new Claims 21 and 24, are addressed to the facet of the recognition functionality of operating on video attributes around the perimeter of the selected portion of the display.

Finally, Applicant has added new Claims 38-45 to more specifically claim the subject matter described in Applicant's specification at page 21, line 27 through page 22, line 16, whereby the selected area recognized by Applicant's invention is an object, such as a

batted ball, within the displayed video image, and the substituted indicia is an enhancement or modulation of the image of that object so as to highlight the path traversed by such object over a sequence of multiple frames of the video transmission. In particular, New Claims 38 and 39, which are apparatus claims, depend from amended Claim 1, while apparatus Claims 40 and 41 depend from new independent Claim 23 (i.e., objected-to Claim 8 rewritten in independent form). Similarly, new method Claims 42 and 43 depend from amended base Claim 10, while new method Claims 44 and 45 depend from new independent Claim 25 (i.e., objected-to Claim 16 written in independent form).

IV. OTHER MATTERS

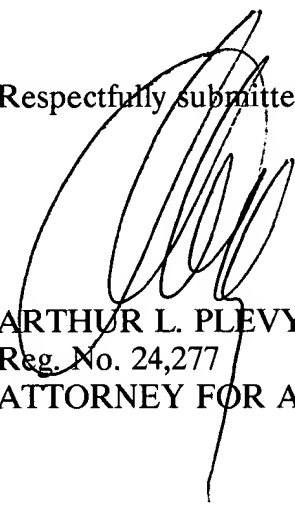
Applicant has received the PCT search results from the filing of his PCT application and is herewith submitting a supplemental Information Disclosure Statement listing the references cited in that PCT search. Applicant has reviewed each of the references cited in the PCT search and believes that none are as relevant to Applicant's invention as Cawley *et al.* cited by the Examiner. Since Applicant's claimed invention, as amended, clearly distinguishes over Cawley, Applicant believes that these PCT references do not require any further response.

V. SUMMARY

Having fully addressed the Examiner's Section 102 and 103 rejections, as well as his objections to claims depending from rejected base claims, it is believed that, in view of the preceding amendments and remarks, this application is now in condition for allowance. Should the Examiner be of the opinion, however, that such action can not be taken, he is invited to contact the Applicant's attorney at the number below as a means for resolving any outstanding issues, and to thereby avoid another office action short of a Notice of Allowance.

A check in the amount of \$645.00 to cover fees due in respect to claims added by this amendment is enclosed. If any additional fees are due in respect to this amendment, please charge them to Deposit Account No. 16-2131.

Respectfully submitted,



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